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tion. Further, the dramatic impacts of these

Higher education, business, and public policy makers will need to turn their attention to efforts of aligning higher education curricula and outcomes with the escalating demands of the surrounding environment. This should not be taken as a signal that broad support for liberal education has waned. To the contrary, the value and benefits of a liberal education will be more respected and in greater demand as the world becomes increasingly complex. But we will all need to work hard to support this case.

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Neither the degree nor the institution nor even the reputation of the American system of higher education itself is any longer sufficient to ensure the successful transition of students into the workplaces of the twenty-first century. Upon leaving college and entering the workplace, students are increasingly facing tests and assessments of their basic knowledge and skills and their aptitude for continuous learning. Employers are less concerned with transcripts than the demonstration of achievement and competency across a variety of general and specialized skills.

The rest of the world is catching up! Literacy rates are rising in Asia, Eastern Europe, and South America. Higher education investments and outcomes are exploding in India, China, and Chile. While it used to be first in terms of college attendance, the United States has now fallen to sixth. Research and development investments by other countries are increasing well above levels in the United States, and foreign direct investments in China have surpassed those in the United States. As a result, the United States' percentage of the total world output of goods and services has fallen from 40 percent to 21 percent. The United States used to produce 61 percent of all published research, but, as other countries exercise new levels of research leadership, it

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Twenty-first Century



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now produces only 29 percent. Finally, perhaps the most telling signal that the world is catching up, only 52 percent of the patents responsible for American industrial leadership are now owned by U.S. sources—the lowest percentage in our history.

Over the next five years, these numbers will increase exponentially as highly populated countries in Asia, South America, and Europe dramatically increase the percentage of their population in higher education, their investments in research and development, their productivity, and the overall growth in their Gross National Product/Gross Domestic Product. Added to this is the fact that most of these countries have significantly younger populations than the United States. Their ability to mobilize large, well-educated workforces will make them significant economic forces for years to come.

Impact on American business and education

Meanwhile, the United States is experiencing minimal population growth (1.1 percent) and even slower growth in its workforce (0.9 percent). The joint impact of low birth rates and an aging population is only minimally offset by immigration. Juxtaposed against this is a job growth rate in excess of 1.4 percent per year. The net result is projected skilled job shortages of seven million by 2010 and twenty-one million by 2020. The Bureau of Labor Statistics is currently reporting shortages in health care, engineering, teaching, technology, and a variety of technical occupations.

The combined pressures of increasing foreign competition, technological innovation, and the constrained labor market have required American business to engage in an endless cycle of productivity improvement. The continuous evolution of the workplace has had (and will continue to have) a direct impact on job content, application, and skill requirements. As productivity improvements influence occupational application, every oc-

cupation now requires that employees demonstrate greater responsibility, higher skills, broader application abilities, and continuous learning.

Institutions of higher education must respond to these trends by keeping the curriculum aligned with the constantly changing content and application of technical specialties in the workplace. At the same time, the number of enrollments in postsecondary education continues to grow, and both native-born and immigrant populations that are ill prepared to meet these escalating academic demands account for an increasing percentage of that growth. Consequently, more than 53 percent of current college students must take remedial classes in either mathematics or English.

Business, against this backdrop, reports finding weaknesses amongst recent graduate hires in the following basic academic areas: writing, math, science, information technology, and working knowledge of global integration. In addition to a lack of basic academic preparation, business reports a lack of knowledge of application and analysis. Finally, students often come to the workplace ill prepared in the areas of teamwork, diversity, ethics, and lifelong learning. As a result, employers spent more than \$40 million for remedial programming last year.

This entire cycle is not a “periodic” phenomenon. The impacts of globalization, demographics, and productivity will continue to escalate. Much like business, colleges and universities are now, more than ever, required to establish permanent systems of continuous improvement.

Liberal education

It is in this very challenging environment that employers continue to believe in and support the traditional value of a liberal education. As Roger Smith (1987), the former chief executive officer of General Motors, points out, “Liberal Arts may ultimately prove to be the most relevant learning model. People trained



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in the Liberal Arts learn to tolerate ambiguity and to bring order out of apparent confusion. They have the kind of sideways thinking and cross-classifying habit of mind that comes from learning, among other things, the many different ways of looking at literary works, social systems, chemical processes, or languages.”

In the future, the inherent constructs of liberal education will be more applicable and in higher demand than they are today. Employers do not want, and have not advocated for, students prepared for narrow workforce specialties. Rather, the application of specialized knowledge will be more and more integrated within a broader range of sociopolitical environments that place a premium on judgment, communication, collaboration, and analytical skills. Virtually all occupational endeavors require a working appreciation of the historical, cultural, ethical, and global environments that surround the application of skilled work. As knowledge, technology, and global impacts escalate at dizzying rates, so too will the value and significance of the liberal education framework increase.

Challenges for liberal education

The primary question then is not whether a liberal education but, rather, what constitutes a liberal education in the twenty-first century. First, colleges and universities must continue to respond to the highest principles of an intellectually challenging education that exposes students to the broadest view of the wider world. As that world continues to evolve, institutions, departments, and professors will face the daunting challenge of adapting new curricula to the traditional college time and experience model.

The second new challenge is to ensure that graduates have specific, demonstrated competencies in the academic, applied, and soft skill areas that are essential to successfully applying the benefits of liberal learning. Students must be prepared to enter either graduate school or the workplace with the ability to apply the

skills developed through their broader learning experience. Thus, institutions are challenged to ensure that the curriculum is designed to foster student competency in the following areas: basic academics (writing, math, science, technology, and global integration); application skills (integrated and applied learning, critical thinking); and soft skills (teamwork, ethics, diversity, and lifelong learning preparation).

The definitions of liberal learning and of a liberal education for the twenty-first century include not only exposure to the breadth of civilized society in an increasingly complex world, but also the absolute assurance that students possess the requisite general education competencies to apply that learning in the constantly evolving world of work.

Educators, students, and employers will need to reinvigorate their age-old compact. Students need to know that attending a particular institution will, in fact, prepare them with the basic and specialized knowledge required for both their acceptance and their survival in an ever-changing workplace. Employers need to have greater clarity about and faith in the meaning of the degree from a particular institution. Educators need assurance that their curriculum and student learning standards are aligned with the expectations of the global marketplace. This compact is as old and as revered as higher education itself. What are changing are the substantive components that ensure relevance in a world with constantly shifting expectations.

Institutional challenges

Presumptions that course content, application, professorial pronouncements, or degree attainment reflect student competency are no longer adequate for the student, employer, or the academic institution. For liberal education to be effective and valued, institutions must clearly establish and give public visibility to the “quality achievements” required of every graduate of that institution. Establishing a clear system of standards, assessments, and remediation is the means through which

Having established the structures of the system, institutions must establish and utilize a formal system of ongoing dialogues with employers and graduates in order to continuously modify the standards. Following are the most obvious and essential components:

- **Clear visible standards.** Students, professors,

- **Assessments and remediation.** Institutions must ensure that student achievement is being continually assessed against the standards and that appropriate remedial action is taken to address weaknesses in student performance, curriculum alignment, and professorial performance.

- **Continual updates.** A formal feedback system that ensures continual input from both employers and graduates in supporting the



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relevance of the standards and revitalizing them as expectations change.

The definition of both the content and the expected achievement levels of the standards is the sole prerogative of the individual institution. Indeed, this becomes a significant part of the institution's identity and reputation, and it is a visible reflection of its educational quality. Active public disclosure of the standards and visible demonstrations that all graduates of a specific institution meet them would significantly improve support for the institution from employers, policy makers, and the public.

On the other hand, this would create a higher degree of self-imposed accountability. Setting forth clear outcome standards requires that they are embedded in the curriculum and that both students and professors are clearly aware of, and culpable for, the content and the expected outcomes. Assessments must be aligned and reflective of the expected levels, and remedial programs must be readily available and effective. In the end, the institution itself becomes more publicly accountable to employers, students, and policy makers for the self-imposed assurances of relevant student achievement.

America's advantage

David Kearns (2000), the highly successful former chief executive officer of Xerox, believes that the tradition of liberal education is one of America's greatest advantages in the global marketplace. "We are reminded that the real challenge of today's economy is not in making things but in producing creative ideas. Today, the race goes not just to the swift, but to the inventive, the resourceful, the curious. And that is what is what a liberal education is all about."

Liberal education, with its mix of the full, rich breadth of intellectual inquiry, now enhanced with practical learning, is the essential foundation for success in every growing occupation. The challenge is to sustain that tradition while also ensuring that it both reflects

the changing expectations of a global economy and provides the essential skills necessary for applying the benefits of that education.

The advent of globalization has brought enormous changes to American business, government policies, and the lives of individuals. As a result, more Americans than ever are finding their way into postsecondary education in hopes of making the connection to the high-demand marketplace. To meet these growing expectations, higher education will have to form new partnerships, create new communication vehicles, and commit to a public system of continuous improvement.

Yes, the world is catching up. The men, women, and families in other countries have the same desires for quality of life and high standards of living as do Americans. The growing impact of global expansion will not be stemmed by legislative or regulatory protections. The test of America's commitment will be the degree to which we are willing to invest our policy and financial resources in an education system that ensures our citizens receive the practical and intellectual tools with which to successfully compete. □

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